

Forecasting woodfuels demand in Ghana – the process model approach

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In Ghana, woodfuels (fuelwood and charcoal) account for about 66% of the country's total annual energy consumption, with imported petroleum and electricity making up the balance of 20% and 14%, respectively. Notwithstanding the significance of woodfuels in the energy sector of Ghana, the information on the levels and patterns of woodfuels demand of households, which is the highest consumer of woodfuels, is rather sketchy. A reliable estimation of the future demand of woodfuels is crucial for the planning of interventions which are geared towards the sustainability of the resource.

A study has been conducted to investigate the factors that influence the quantity and patterns of use of woodfuels by households in Ghana, and thereby develop a model for forecasting of woodfuels demand of the household sector. The observations from the indicated that the rural households in Ghana had approximately the same Basic Energy Demand per capita, regardless of the ecological zone where they are located. It was also observed that urban households in the different ecological zones and income groups had approximately the same Basic Energy Demand per capita, if Accra households were excluded. Finally, it was confirmed that the rural and urban households did not have the same Basic Energy Demand per capita.

A spreadsheet has been developed, using the Process Analysis approach, which can be used to forecast the consumption of woodfuels (fuelwood and charcoal) in Ghana. The forecast model is based on the general observation that households tend to shift from fuelwood to charcoal, and from charcoal to LPG and electricity as their income improves. The forecast model allows the variation of certain parameters for the evaluation of various scenarios and policy options. These parameters include i) end-use device efficiencies; ii) calorific value of woodfuels; iii) growth rate of household income; iv) conversion efficiency of charcoal production; v) population growth rate. This enhances the use of the model for policy analysis on woodfuels in Ghana.